PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 13 June 2000 (13.06.00)	
International application No. PCT/GB99/03860	**Applicant's or agent's file reference** Q036884PPC
International filing date (day/month/year) 22 November 1999 (22.11.99)	**Priority date** (day/month/year) 27 November 1998 (27.11.98)
Applicant SANDERS, Nigel, Hugh	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

17 May 2000 (17.05.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer S. Mafla
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :
A23G 1/00, 3/00, 1/04, 1/10, 1/20

A1

(11) International Publication Number: WO 00/32057

(43) International Publication Date: 8 June 2000 (08.06.00)

(21) International Application Number: PCT/GB99/03860

(22) International Filing Date: 22 November 1999 (22.11.99)

(30) Priority Data:
9825892.4 27 November 1998 (27.11.98) GB

(71) Applicant *(for all designated States except US)*: CADBURY SCHWEPPES PLC [GB/GB]; 25 Berkeley Square, London W1X 6HT (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: SANDERS, Nigel, Hugh [GB/CA]; 317 Runnymede Road, Toronto, Ontario M6S 2Y5 (CA).

(74) Agents: PEARCE, Anthony, Richmond et al.; Marks & Clerk, Alpha Tower, Suffolk Street Queensway, Birmingham B1 1TT (GB).

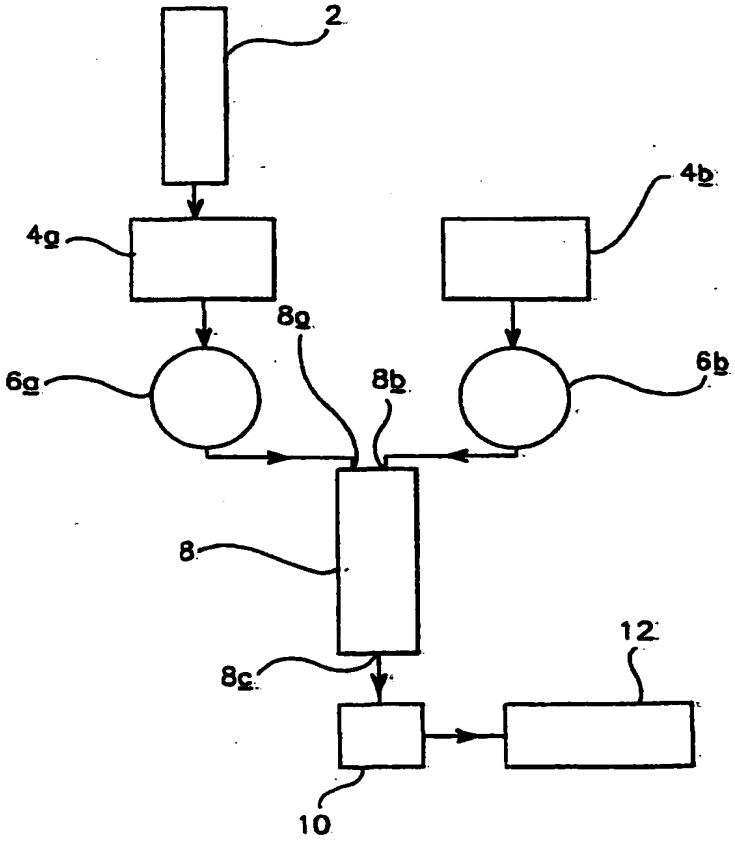
(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: IMPROVEMENTS IN CONFECTIONERY MANUFACTURE

(57) Abstract

A continuous process for the manufacture of a fat–based heat–meltable confectionery product comprises the steps of introducing a fat–based heat–meltable confectionery mixture and water into a low–shear extruded mixer (8). The fat–based heat–meltable confectionery mixture and water are mixed as they pass through the mixer (8) to form a fat–based heat–meltable confectionery composition. The fat–based heat–meltable confectionery composition is formed into the fat–based heat–meltable confectionery product.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

TENT COOPERATION TREAT

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
Q036884PPC		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB 99/ 03860	22/11/1999	27/11/1998
Applicant		
CADBURY SCHWEPPES PLC et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readbie form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

   [ ] as suggested by the applicant.

   [X] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

[redacted] national Application No
[redacted]/GB 99/03860

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23G1/00 A23G3/00 A23G1/04 A23G1/10 A23G1/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23G B01F B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	EP 0 958 747 A (DOVEUROPE) 24 November 1999 (1999-11-24) page 3, line 28 - line 30 page 3, line 40 - line 44 page 4, line 9 - line 12 claims 1,6-11 ---	18,19, 22,24-27
X	EP 0 800 770 A (SOCIETE DES PRODUITS NESTLÉ) 15 October 1997 (1997-10-15) page 2, line 53 -page 3, line 2; claims 1-10; examples 1,5 page 2, line 19 - line 20 --- -/--	1,6, 8-10, 17-20, 22,27

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 February 2000	23/02/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Lepretre, F

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

[redacted] International Application No
[redacted]/GB 99/03860

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 311 481 A (SOCIETÉ DES PRODUITS NESTLÉ) 1 October 1997 (1997-10-01)	1,6-9, 17-20, 22,23,27
A	page 3, paragraph 2; claims 1,5,7,14,15,17-20	3-5
X	EP 0 393 327 A (LOTTE CO., LTD.) 24 October 1990 (1990-10-24)	18,19, 22,24-27
A	claims; examples	1-17,20, 23
X	EP 0 033 718 A (BATELLE MEMORIAL) 12 August 1981 (1981-08-12)	18,19, 22,24-27
A	claims 1-4,7,12,13; examples	1-17,20, 23
X	US 2 760 867 A (KEMPF ET AL.) 28 August 1956 (1956-08-28) column 5, line 15 -column 6, line 14	18,19, 22,27
A	claims 1-3,8,9	1-17,20
X	WO 93 12664 A (KARLSHAMNS OILS & FATS AB) 8 July 1993 (1993-07-08) cited in the application	18,19, 22,24-27
A	page 4, line 24 - line 28 page 5, line 4 - line 9 claims 1,3,5; examples 2,6	1-17,20
X	WO 91 19424 A (MARS G.B. LIMITED) 26 December 1991 (1991-12-26) page 8, line 24 -page 10, line 18; examples	18,19, 22-27
X	EP 0 354 600 A (UNILEVER N.V.) 14 February 1990 (1990-02-14)	18,19, 22-27
A	page 2, line 52 -page 3, line 4 page 3, line 17 - line 21 page 3, line 43 - line 47 page 4, line 57 -page 5, line 14 page 5, line 49 - line 54; claims 8,9; examples	1-17
X	FINCKE, H. ET AL.: "Handbuch der Kakaoerzeugnisse" 1965 , SPRINGER , BERLIN XP002129392 page 252 -page 254	18,19,27
A	GB 1 520 490 A (WACKER CHEMIE) 9 August 1978 (1978-08-09) page 3, line 99 - line 116; examples 5,6	1,2,9, 18,20,21

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
GB 99/03860

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 958747	A	24-11-1999	NONE		
EP 800770	A	15-10-1997	AU	711208 B	07-10-1999
			AU	1783997 A	16-10-1997
			CA	2200887 A	12-10-1997
			JP	10028530 A	03-02-1998
			NZ	314553 A	29-04-1999
			US	5965179 A	12-10-1999
GB 2311481	A	01-10-1997	AU	1648997 A	02-10-1997
			BG	101281 A	30-01-1998
			BR	9701456 A	18-08-1998
			CA	2198759 A	27-09-1997
			CZ	9700912 A	15-10-1997
			EP	0797922 A	01-10-1997
			GB	2311483 A	01-10-1997
			HU	9700643 A	29-12-1997
			JP	10004884 A	13-01-1998
			NO	971193 A	29-09-1997
			NZ	314293 A	28-07-1998
			PL	319133 A	29-09-1997
			SK	37297 A	08-10-1997
			ZA	9702448 A	21-09-1998
EP 393327	A	24-10-1990	JP	2276537 A	13-11-1990
			JP	2514711 B	10-07-1996
			AU	626650 B	06-08-1992
			AU	5219690 A	18-10-1990
			DE	69008609 D	09-06-1994
			DE	69008609 T	01-09-1994
			KR	9705236 B	14-04-1997
			US	5160760 A	03-11-1992
EP 33718	A	12-08-1981	AR	222743 A	15-06-1981
			AT	5226 T	15-11-1983
			AU	542304 B	14-02-1985
			AU	6664581 A	06-08-1981
			CA	1162783 A	28-02-1984
			ES	498924 A	01-05-1982
			GR	73126 A	07-02-1984
			JP	57115140 A	17-07-1982
			KR	8600888 B	16-07-1986
			MX	6322 E	01-04-1985
			OA	6731 A	30-06-1982
			US	4446166 A	01-05-1984
			ZA	8100592 A	24-02-1982
US 2760867	A	28-08-1956	NONE		
WO 9312664	A	08-07-1993	SE	507450 C	08-06-1998
			AU	3270493 A	28-07-1993
			EP	0661925 A	12-07-1995
			SE	9103783 A	21-06-1993
			US	5486376 A	23-01-1996
WO 9119424	A	26-12-1991	AU	8001191 A	07-01-1992
			CA	2085613 A	20-12-1991
			DE	69117059 D	21-03-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
/GB 99/03860

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9119424 A		DE 69117059 T	27-06-1996
		EP 0533815 A	31-03-1993
		ES 2084171 T	01-05-1996
EP 354600 A	14-02-1990	AT 94025 T	15-09-1993
		AU 3007489 A	15-02-1990
		DE 68908984 D	14-10-1993
		DE 68908984 T	27-01-1994
		JP 2200145 A	08-08-1990
		US 5248509 A	28-09-1993
GB 1520490 A	09-08-1978	DE 2458862 A	16-06-1976
		BE 836479 A	10-06-1976
		CH 610218 A	12-04-1979
		FR 2293970 A	09-07-1976
		IT 1052784 B	20-07-1981
		JP 51085552 A	27-07-1976
		NL 7513473 A	15-06-1976

PATENT COOPERATION TREATY

ack due
27 May 01

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

PEARCE, ANTHONY R.
MARKS & CLERK
Alpha Tower
Suffolk Street Queensway
Birmingham B1 1TT
GRANDE BRETAGNE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	09.03.2001
Applicant's or agent's file reference Q036884PPC	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/03860	22/11/1999	27/11/1998

Applicant
CADBURY SCHWEPPES PLC et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

   The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

   Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

   For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Longo, E Tel.+49 89 2399-8141

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
Q036884PPC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/03860	22/11/1999	27/11/1998
International Patent Classification (IPC) or national classification and IPC A23G1/00		
Applicant CADBURY SCHWEPPES PLC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☒ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
17/05/2000	09.03.2001
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Baminger, U Telephone No. +49 89 2399 2176

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03860

I. Basis f th rep rt

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:
Description, pages:

1-13 as originally filed

Claims, No.:

1-4 as originally filed

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

   ☐ restricted the claims.

   ☐ paid additional fees.

   ☐ paid additional fees under protest.

   ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with.

   ☒ not complied with for the following reasons:
   see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

   ☒ all parts.

   ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	7, 11-16
	No:	Claims	1-6, 8-10, 17-27
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-27

Industrial applicability (IA)	Yes:	Claims	1-27
	No:	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Reference is made to the following documents:

D1 EP-A-0 800 770 (SOCIETE DES PRODUITS NESTLÉ)
D2 GB-A-2 311 481 (SOCIETÉ DES PRODUITS NESTLÉ)
D3 EP-A-0 393 327 (LOTTE CO., LTD.)
D4 EP-A-0 033 718 (BATELLE MEMORIAL)
D5 US-A-2 760 867 (KEMPF ET AL.)
D6 WO 93 12664 A (KARLSHAMNS OILS & FATS AB)
D7 WO 91 19424 A (MARS G.B. LIMITED)
D8 EP-A-0 354 600 (UNILEVER N.V.)
D9 FINCKE, H. ET AL.: 'Handbuch der Kakaoerzeugnisse' 1965 , SPRINGER , BERLIN
D10 GB-A-1 520 490 (WACKER CHEMIE)
D11 Hui, Y.H. (Ed.), Bailey's Industrial Oil and Fat Products, vol. 3, 1996, John Wiley and Sons, NY
D12 Belitz, H.-D. and Grosch, W., Lehrbuch der Lebensmittelchemie, 1992, Springer, Berlin
D13 Hess, O. &. A., Wiener Küche, 1986, Carl Ueberreuter, Wien

Re Item IV
Lack of unity of invention

This application appears to address two different technical problems, for which two separate solutions are claimed. According to the description of the application (p.2, 3 and 5), claims 1-17 aim at the production of high-temperature tolerant confectionery products that retain their shape at higher temperatures than conventional chocolate, whereas claims 18-27 aim at the production of confectionery products that have superior eating characteristics when consumed directly from refrigeration. These two groups of inventions do not share common special technical features (Rule 13.2, PCT). Therefore the requirements of Rule 13.1 PCT cannot be seen as fulfilled.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statem nt

5.1 The subject-matter of claim 1 cannot be considered novel (Article 33(2) PCT) in view of for example documents D1 (cf. p.2, lines 1, 23-26; p.3, lines 1-2), D2 (cf. p.1 paragraph 1 and p.5 paragraphs 4 and 5), D8 (cf. p.3, lines 17-19 and p. 5, lines 49-54) and D10 (cf. 2, lines 22-52, p.3, line 103 and example 5).
All relate to processes for the production of chocolate or analogues where the fat-based heat-meltable confectionary mixture is coextruded with a second water containing ingredient under low shear conditions to form a composition and finally a corresponding confectionary product. Water is added for example in the form of sugar (D10), a water and oil emulsion (D8) other food materials (D2) or an aqueous gel (D1).

5.2 The use of a cavity transfer mixer is explicitly disclosed in D8 (p. 5, line 53). The subject-matter of claim 2 of the present application can therefore not be considered novel.

5.3 D8 (p.5 lines 27-29) explicitly discloses a possible embodiment where chocolate grains are mixed with a W/O emulsion. It is clear to a person in the art that although it is not explicitly mentioned in D8, such a W/O emulsion would include an emulsifier. D1 (p.2, 45 and 48) also explicitly discloses the possible use of water as emulsion with oil (however not a W/O emulsion) and the use of an emulsifier. The subject-matters of claims 3-5 of the present application can not be considered novel.

5.4 The products of D1 (p.3, line 18) contain 3-20 wt% of water. Due to the disclosure of the specific limit 3%, the subject-matter of claim 6 can not be regarded novel.

5.5 The products of D1 (p.3, line 18) contain 3-20 wt% and those of D8 (p.3, line 33) preferably contain 5-90 wt% of water. These products therefore differ from the

products of claim 7 of the present application. Documents D2 and D10 do not explicitly disclose the moisture content of their products. The subject-matter of claim 7 can therefore be regarded novel.

5.6 Although not explicitly disclosed in any prior art, the simultaneous addition of the confectionery mixture and water to the mixer can be seen as implicitly present in at least D1-D3. The subject-matter of claim 8 can therefore not be regarded as being novel.

5.7 Documents D1 (p. 2, line 24), D2 (p.5, last paragraph), D8 (p.3, line 18) and D10 (ex. 5) all describe the use of chocolate mixtures. The subject-matter of claim 9 can therefore not be regarded novel.

5.8 At least D1 (p.3, line 10) explicitly discloses the use of tempered chocolate mixtures. The subject-matter of claim 10 can therefore not be regarded novel.

5.9 Documents D1, D2, D8 and D10 do not explicitly disclose the temperature at which the mixture or water is added to the mixer. Therefore the subject-matter of claims 11 and 15 can be regarded to be novel.

5.10 The same arguments apply mutatis mutandis to the subject-matter of the dependent claims 12-14 and 16.

5.11 Claim 17 refers to a product prepared in accordance with the method of any of the claims 1-16. It must be pointed out that a product is not rendered patentable when prepared by a patentable process. In order to be patentable, it must be novel and inventive per se. In the present case, due to the inclusion of product features in the claims directed to the process, the above arguments apply mutatis mutandis to claim 17.

5.12 For the purpose of examining the inventive step of the subject-matter of claim 7, D3 can be regarded as the closest prior art. The problem to be solved appears to lie in the provision of an alternative method for the manufacture of a fat-based heat-meltable confectionery product. The method disclosed in D3 differs from the method of the present application mainly in that the apparatus used for mixing is

not specifically disclosed, whereas the present application uses a low-shear extruder mixer. The solution found in the present application to use a low-shear extruder mixer or more specifically a cavity transfer mixer cannot be considered inventive (Art. 33 (3) PCT), since the use of extruders are well known in the art of chocolate manufacture (see e.g. D9) and a cavity transfer mixer is used in D8 for the production of fat-based heat-meltable products.

5.13 For the purpose of examining the inventive step of claim 17, D1 can be regarded as the closest prior art. The problem to be solved appears to lie in the provision of an alternative high temperature tolerant, chocolate product. The solution found in the present application is a product with a water content of 1.8-2.5% by weight. This feature appears to be conventional for the preparation of such chocolate products and cannot be considered inventive i.a. for the following reasons:
D5 (claim 9) discloses heat tolerant chocolate products with less than 3% water and the water content of the heat resistant chocolate products of D3 (cf. claims 5 and 6) can be calculated to lie in the range of 0.66-8 wt%. There is no technical teaching apparent for the choice of a more narrow sub-range of the water content in the present application.

5.14 The subject-matter of the independent claim 18 is not novel in view of documents D1-D10. All of these documents disclose processes for the manufacture of fat-based heat-meltable confectionary products, where the fat-based mixture and water are mixed and a corresponding product formed. The phrase "fat component remains substantially liquid .... not exceeding 30°C" was interpreted as meaning that the fat component is substantially liquid at 30°C or below.
Chocolate material generally contains cocoa butter and optionally milk fat.
The melting point of cocoa butter depends on the crystal form (cf. D11, p. 370, table 9.8). Generally however it is said that melting occurs in the range of 27-33°C (D11, p.367) and melting profiles of cocoa butters of different origin (D11, p. 368, fig. 9.4) show that only 40-60% of solids remain at 30°C. Fat can appear liquid even when in a partially molten state, especially when mixing is effected. Butter fat (6-8% solid at 30°C) (D12, p.466, table 10.19) and vegetable oil can also be generally regarded as liquid at 30°C.
Hence all documents that disclose the use of cocoa, butter fat or vegetable oil in fat-based heat-meltable mixtures, are also regarded as falling within the scope of

claim 18. (Ref.: cf. D1: p.1, lines 27-30, p.2, line 4 and ex. 1; D2: p.3, 2 nd paragraph and p.5 last paragraph; D3: p.6, ex.1; D4: p. 7. lines 9-11 and example 1a); D5: p.5, line 60 - p.6, line 6; D6: p. 3, lines 11-15, ex. 6; D7: ex. 6 and 11; D8: p.4, lines 32, 57-58, p.5, lines 1-2 and 39-41; D9: p.253; D10: ex. 5)

5.15 D3 (p.6 ex.1) explicitly discloses the use of oils and fats with a solid lipid content of 8% at 20°C. This fat can therefore be regarded as liquid at 20°C. Additionally, The ice cream of D7 (ex. 6) or D8 (3,18) or any butter based cream used in e.g. the Viennese cuisine (cf. D13, p.1211) will fall within the scope of claim 19. The subject-matter of claim 19 can therefore not be regarded to be novel.

5.16 The subject-matters of claims 20-21 are not new in view of at least D8 (see points above).

5.17 The subject-matter of claims 22 and 23 are not new in view of at least D2 (p.3, paragraph 2) and D8 (p.1, lines 17-19).

5.18 The subject-matters of claims 24-26 are not new in view of D8 (p. 5, lines 39-40).

5.19 Analogous arguments apply mutatis mutandis to the subject-matter of claim 27. The product cannot be considered to fulfill the requirements of the PCT as to novelty and inventive step, merely because it is prepared by a process according to claims 18-25.

Re Item VI

Certain documents cited

Document EP 0958747 was filed the 11.05.98 (i.e. before the priority of the present application) and published the 24.11.99 (after the priority of the present application). The contents of the said document may therefore be relevant for the assessment of novelty in the European regional phase.

Re Item VII

Certain defects in the international application

The documents D1-D6 have not been cited in the description (Rule 5.1 (a)(ii) PCT).

Re Item VIII

Certain observations on the international application

8.1 In several claims a reference to the figure (i.e. mixer (8)) is made, however the reference to the number of the figure (i.e. fig. 1/1) is missing.

8.2 The wording of the phrase "fat component remains substantially liquid .... not exceeding 30°C" employed in claim 18 is not clear. In the case of a melting point higher than 30°C the phrase would not be logic.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
Q036884PPC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/03860	22/11/1999	27/11/1998
International Patent Classification (IPC) or national classification and IPC A23G1/00		
Applicant CADBURY SCHWEPPES PLC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☒ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
17/05/2000	09.03.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Baminger, U Telephone No. +49 89 2399 2176

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03860

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:
Description, pages:

1-13 as originally filed

Claims, No.:

1-4 as originally filed

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

☐ paid additional fees.

☐ paid additional fees under protest.

☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☒ all parts.

☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	7, 11-16
	No:	Claims	1-6, 8-10, 17-27
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-27

Industrial applicability (IA)	Yes:	Claims	1-27
	No:	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Reference is made to the following documents:

D1 EP-A-0 800 770 (SOCIETE DES PRODUITS NESTLÉ)
D2 GB-A-2 311 481 (SOCIETÉ DES PRODUITS NESTLÉ)
D3 EP-A-0 393 327 (LOTTE CO., LTD.)
D4 EP-A-0 033 718 (BATELLE MEMORIAL)
D5 US-A-2 760 867 (KEMPF ET AL.)
D6 WO 93 12664 A (KARLSHAMNS OILS & FATS AB)
D7 WO 91 19424 A (MARS G.B. LIMITED)
D8 EP-A-0 354 600 (UNILEVER N.V.)
D9 FINCKE, H. ET AL.: 'Handbuch der Kakaoerzeugnisse' 1965 , SPRINGER , BERLIN
D10 GB-A-1 520 490 (WACKER CHEMIE)
D11 Hui, Y.H. (Ed.), Bailey's Industrial Oil and Fat Products, vol. 3, 1996, John Wiley and Sons, NY
D12 Belitz, H.-D. and Grosch, W., Lehrbuch der Lebensmittelchemie, 1992, Springer, Berlin
D13 Hess, O. &. A., Wiener Küche, 1986, Carl Ueberreuter, Wien

Re Item IV

Lack of unity of invention

This application appears to address two different technical problems, for which two separate solutions are claimed. According to the description of the application (p.2, 3 and 5), claims 1-17 aim at the production of high-temperature tolerant confectionery products that retain their shape at higher temperatures than conventional chocolate, whereas claims 18-27 aim at the production of confectionery products that have superior eating characteristics when consumed directly from refrigeration. These two groups of inventions do not share common special technical features (Rule 13.2, PCT). Therefore the requirements of Rule 13.1 PCT cannot be seen as fulfilled.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive st p or industrial applicability; citations and explanations supporting such statem nt

5.1 The subject-matter of claim 1 cannot be considered novel (Article 33(2) PCT) in view of for example documents D1 (cf. p.2, lines 1, 23-26; p.3, lines 1-2), D2 (cf. p.1 paragraph 1 and p.5 paragraphs 4 and 5), D8 (cf. p.3, lines 17-19 and p. 5, lines 49-54) and D10 (cf. 2, lines 22-52, p.3, line 103 and example 5).
All relate to processes for the production of chocolate or analogues where the fat-based heat-meltable confectionary mixture is coextruded with a second water containing ingredient under low shear conditions to form a composition and finally a corresponding confectionary product. Water is added for example in the form of sugar (D10), a water and oil emulsion (D8) other food materials (D2) or an aqueous gel (D1).

5.2 The use of a cavity transfer mixer is explicitly disclosed in D8 (p. 5, line 53). The subject-matter of claim 2 of the present application can therefore not be considered novel.

5.3 D8 (p.5 lines 27-29) explicitly discloses a possible embodiment where chocolate grains are mixed with a W/O emulsion. It is clear to a person in the art that although it is not explicitly mentioned in D8, such a W/O emulsion would include an emulsifier. D1 (p.2, 45 and 48) also explicitly discloses the possible use of water as emulsion with oil (however not a W/O emulsion) and the use of an emulsifier. The subject-matters of claims 3-5 of the present application can not be considered novel.

5.4 The products of D1 (p.3, line 18) contain 3-20 wt% of water. Due to the disclosure of the specific limit 3%, the subject-matter of claim 6 can not be regarded novel.

5.5 The products of D1 (p.3, line 18) contain 3-20 wt% and those of D8 (p.3, line 33) preferably contain 5-90 wt% of water. These products therefore differ from the

products of claim 7 of the present application. Documents D2 and D10 do not explicitly disclose the moisture content of their products. The subject-matter of claim 7 can therefore be regarded novel.

5.6 Although not explicitly disclosed in any prior art, the simultaneous addition of the confectionery mixture and water to the mixer can be seen as implicitly present in at least D1-D3. The subject-matter of claim 8 can therefore not be regarded as being novel.

5.7 Documents D1 (p. 2, line 24), D2 (p.5, last paragraph), D8 (p.3, line 18) and D10 (ex. 5) all describe the use of chocolate mixtures. The subject-matter of claim 9 can therefore not be regarded novel.

5.8 At least D1 (p.3, line 10) explicitly discloses the use of tempered chocolate mixtures. The subject-matter of claim 10 can therefore not be regarded novel.

5.9 Documents D1, D2, D8 and D10 do not explicitly disclose the temperature at which the mixture or water is added to the mixer. Therefore the subject-matter of claims 11 and 15 can be regarded to be novel.

5.10 The same arguments apply mutatis mutandis to the subject-matter of the dependent claims 12-14 and 16.

5.11 Claim 17 refers to a product prepared in accordance with the method of any of the claims 1-16. It must be pointed out that a product is not rendered patentable when prepared by a patentable process. In order to be patentable, it must be novel and inventive per se. In the present case, due to the inclusion of product features in the claims directed to the process, the above arguments apply mutatis mutandis to claim 17.

5.12 For the purpose of examining the inventive step of the subject-matter of claim 7, D3 can be regarded as the closest prior art. The problem to be solved appears to lie in the provision of an alternative method for the manufacture of a fat-based heat-meltable confectionery product. The method disclosed in D3 differs from the method of the present application mainly in that the apparatus used for mixing is

not specifically disclosed, whereas the present application uses a low-shear extruder mixer. The solution found in the present application to use a low-shear extruder mixer or more specifically a cavity transfer mixer cannot be considered inventive (Art. 33 (3) PCT), since the use of extruders are well known in the art of chocolate manufacture (see e.g. D9) and a cavity transfer mixer is used in D8 for the production of fat-based heat-meltable products.

5.13 For the purpose of examining the inventive step of claim 17, D1 can be regarded as the closest prior art. The problem to be solved appears to lie in the provision of an alternative high temperature tolerant, chocolate product. The solution found in the present application is a product with a water content of 1.8-2.5% by weight. This feature appears to be conventional for the preparation of such chocolate products and cannot be considered inventive i.a. for the following reasons:
D5 (claim 9) discloses heat tolerant chocolate products with less than 3% water and the water content of the heat resistant chocolate products of D3 (cf. claims 5 and 6) can be calculated to lie in the range of 0.66-8 wt%. There is no technical teaching apparent for the choice of a more narrow sub-range of the water content in the present application.

5.14 The subject-matter of the independent claim 18 is not novel in view of documents D1-D10. All of these documents disclose processes for the manufacture of fat-based heat-meltable confectionary products, where the fat-based mixture and water are mixed and a corresponding product formed. The phrase "fat component remains substantially liquid .... not exceeding 30°C" was interpreted as meaning that the fat component is substantially liquid at 30°C or below.
Chocolate material generally contains cocoa butter and optionally milk fat.
The melting point of cocoa butter depends on the crystal form (cf. D11, p. 370, table 9.8). Generally however it is said that melting occurs in the range of 27-33°C (D11, p.367) and melting profiles of cocoa butters of different origin (D11, p. 368, fig. 9.4) show that only 40-60% of solids remain at 30°C. Fat can appear liquid even when in a partially molten state, especially when mixing is effected. Butter fat (6-8% solid at 30°C) (D12, p.466, table 10.19) and vegetable oil can also be generally regarded as liquid at 30°C.
Hence all documents that disclose the use of cocoa, butter fat or vegetable oil in fat-based heat-meltable mixtures, are also regarded as falling within the scope of

claim 18. (Ref.: cf. D1: p.1, lines 27-30, p.2, line 4 and ex. 1; D2: p.3, 2 nd paragraph and p.5 last paragraph; D3: p.6, ex.1; D4: p. 7. lines 9-11 and example 1a); D5: p.5, line 60 - p.6, line 6; D6: p. 3, lines 11-15, ex. 6; D7: ex. 6 and 11; D8: p.4, lines 32, 57-58, p.5, lines 1-2 and 39-41; D9: p.253; D10: ex. 5)

5.15 D3 (p.6 ex.1) explicitly discloses the use of oils and fats with a solid lipid content of 8% at 20°C. This fat can therefore be regarded as liquid at 20°C. Additionally, The ice cream of D7 (ex. 6) or D8 (3,18) or any butter based cream used in e.g. the Viennese cuisine (cf. D13, p.1211) will fall within the scope of claim 19. The subject-matter of claim 19 can therefore not be regarded to be novel.

5.16 The subject-matters of claims 20-21 are not new in view of at least D8 (see points above).

5.17 The subject-matter of claims 22 and 23 are not new in view of at least D2 (p.3, paragraph 2) and D8 (p.1, lines 17-19).

5.18 The subject-matters of claims 24-26 are not new in view of D8 (p. 5, lines 39-40).

5.19 Analogous arguments apply mutatis mutandis to the subject-matter of claim 27. The product cannot be considered to fulfill the requirements of the PCT as to novelty and inventive step, merely because it is prepared by a process according to claims 18-25.

Re Item VI

Certain documents cited

Document EP 0958747 was filed the 11.05.98 (i.e. before the priority of the present application) and published the 24.11.99 (after the priority of the present application). The contents of the said document may therefore be relevant for the assessment of novelty in the European regional phase.

Re Item VII

Certain defects in the international application

The documents D1-D6 have not been cited in the description (Rule 5.1 (a)(ii) PCT).

Re Item VIII

Certain observations on the international application

8.1 In several claims a reference to the figure (i.e. mixer (8)) is made, however the reference to the number of the figure (i.e. fig. 1/1) is missing.

8.2 The wording of the phrase "fat component remains substantially liquid .... not exceeding 30°C" employed in claim 18 is not clear. In the case of a melting point higher than 30°C the phrase would not be logic.

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :
A23G 1/00, 3/00, 1/04, 1/10, 1/20

A1

(11) International Publication Number: WO 00/32057

(43) International Publication Date: 8 June 2000 (08.06.00)

(21) International Application Number: PCT/GB99/03860

(22) International Filing Date: 22 November 1999 (22.11.99)

(30) Priority Data:
9825892.4 27 November 1998 (27.11.98) GB

(71) Applicant *(for all designated States except US)*: CADBURY SCHWEPPES PLC [GB/GB]; 25 Berkeley Square, London W1X 6HT (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: SANDERS, Nigel, Hugh [GB/CA]; 317 Runnymede Road, Toronto, Ontario M6S 2Y5 (CA).

(74) Agents: PEARCE, Anthony, Richmond et al.; Marks & Clerk, Alpha Tower, Suffolk Street Queensway, Birmingham B1 1TT (GB).

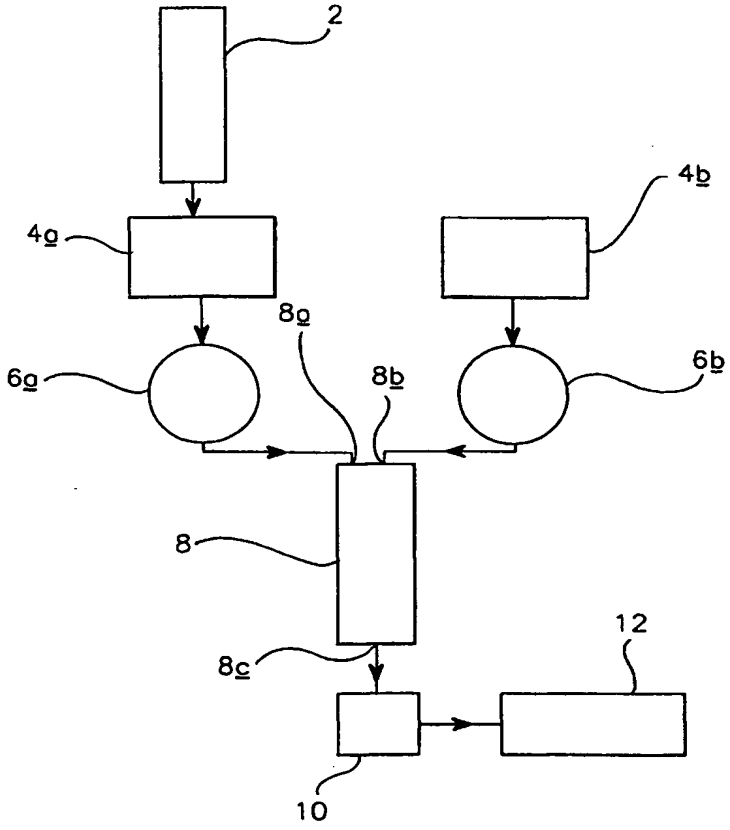
(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: IMPROVEMENTS IN CONFECTIONERY MANUFACTURE

(57) Abstract

A continuous process for the manufacture of a fat–based heat–meltable confectionery product comprises the steps of introducing a fat–based heat–meltable confectionery mixture and water into a low–shear extruded mixer (8). The fat–based heat–meltable confectionery mixture and water are mixed as they pass through the mixer (8) to form a fat–based heat–meltable confectionery composition. The fat–based heat–meltable confectionery composition is formed into the fat–based heat–meltable confectionery product.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

IMPROVEMENTS IN CONFECTIONERY MANUFACTURE

The present invention relates to processes for producing fat-based heat-meltable confectionery products, particularly chocolate-type compositions.

Examples of suitable fat-based heat-meltable confectionery products include chocolate-type compositions and fat-based cremes (e.g. biscuit cremes, wafer cremes and pralines).

For the avoidance of doubt, "chocolate-type compositions" includes conventional milk, plain and white chocolate compositions, such compositions in which at least some of the cocoa butter has been removed (i.e. low fat chocolate) and/or replaced by other fats/oils, and/or having at least some of the sugar removed and/or replaced by bulking agents (i.e. low calorie chocolate), including such compositions which by national or international agreement may not be sold as "chocolate". For clarity, such compositions will hereinafter be referred to as chocolate compositions, and any references to "chocolate mixture", "chocolate composition" or "chocolate product" should be construed accordingly.

The pleasurable organoleptic properties of conventional chocolate are to a significant extent due to the fact that the fat (primarily cocoa butter) which forms the continuous phase in chocolate melts quickly and smoothly in the mouth giving a characteristic mouthfeel. This is because cocoa butter softens at approximately 28°C and is generally completely melted at 32 to 35°C. However, such melting presents problems for storage and

distribution in regions where ambient temperatures are high (e.g. 30 to 40°C).

As a result, much research effort has been directed towards the production of so-called "high-temperature tolerant" chocolate products. As used herein, "high-temperature tolerant" in relation to chocolate products, refers to those products which retain their shape at higher temperatures than conventional chocolate. One approach is to replace the cocoa butter partially or completely with higher melting fats. Although such an approach does yield products which maintain their shape at relatively high temperatures, the higher melting fats melt less readily when eaten and leave an undesirable waxy mouthfeel.

A second approach is to develop a structure of non-fat ingredients in the chocolate product which remains rigid when the fat starts to melt, such as a lattice of predominantly sugar particles. A lattice of sugar and/or other hydrophilic materials may be developed by the addition of water to a chocolate mixture. To have a satisfactory mouthfeel and texture, the lattice should dissolve evenly when the chocolate is eaten, and there should be no large aggregates of non-fat ingredients to impart a gritty texture. For success, the prior art focuses on the problem of how to present water to the chocolate mixture. The solutions offered are to form very small water droplets and/or oil/water emulsions. For example, US 5125160 discloses the use of an aqueous foam and WO93/12664 discloses the use of water-in-oil microemulsions, the water being in the form of droplets of size 10 to 1000Å.

Thus, it is an object of a first aspect of the present invention to provide a process for the manufacture of a fat-based heat-meltable confectionery product which exhibits improved properties.

According to the first aspect of the present invention, there is provided a continuous process for the manufacture of a fat-based heat-meltable confectionery product comprising the steps of:-

(i) introducing a fat-based heat-meltable confectionery mixture into a low-shear extruder mixer,

(ii) introducing water into the low-shear extruder mixer,

(iii) mixing the fat-based heat-meltable confectionery mixture and water as they pass through the mixer to form a fat-based heat-meltable confectionery composition, and

(iv) forming the fat-based heat-meltable confectionery composition into the fat-based heat-meltable confectionery product.

The above process enables the confectionery product formed by the process to retain its shape at a higher temperature than a corresponding confectionery product formed from the fat-based heat-meltable confectionery mixture not having undergone the process.

It will be understood that the basis of the first aspect of the present invention resides in the surprising discovery that, contrary to accepted wisdom, the nature of the mixing of the water with the fat-based heat-meltable confectionery mixture is more significant than the form in which water is added. None of the prior art makes any specific recommendation as to the type of mixer to be used. As used herein "low-shear" means a shear of not more than $1000s^{-1}$.

Preferably, said low-shear extruder mixer is a cavity-transfer type mixer, for example that disclosed in EP 0048590.

The water may be introduced into the mixer by itself, or alternatively as an oil-in-water emulsion, but preferably as a water-in-oil emulsion. If the water is to be added as an emulsion, an emulsifier such as polyglycerol polyricinoleate (PGPR) is preferably included.

Preferably, sufficient water is added such that the fat-based heat-meltable confectionery product has a water content in the range of 1.8 to 3.0% by weight, more preferably in the range of 1.8 to 2.5% by weight.

Preferably, steps (i) and (ii) are effected simultaneously.

Preferably, the fat-based heat-meltable confectionery mixture is a chocolate mixture.

The chocolate mixture may be tempered or untempered. Surprisingly, the process of said first aspect of the present invention does not cause detempering of tempered chocolate mixtures.

Preferably, the water is added to the mixer at 30 to 45°C, and more preferably 40°C.

When the fat-based heat-meltable confectionery mixture is chocolate, it is preferably added to the mixer at 27 to 45°C and, in this case, the mixer is preferably maintained at a temperature of 27 to 45°C. However, in the

case where tempered chocolate is employed, it is preferably added to the mixer at less than 30°C in order to preserve the temper and the mixer is preferably maintained at less than 30°C.

Also according to said first aspect of the present invention, there is provided a fat-based heat-meltable confectionery product prepared in accordance with the process of said first aspect of the present invention.

A related problem is that refrigeration (which may be required even in temperate climates during summer months) hardens conventional chocolate such that it must be held in the mouth for an unacceptably long time in order for it to melt, or it must be chewed. In either event at least some of the pleasure derived from eating chocolate is lost.

European Patent Application No. 0717931 also discloses a chocolate composition suitable for consumption at low temperatures. The fat content of the composition includes at least 40% by weight of fats rich in 2-unsaturated-1,3-disaturated glycerides. Specific fats include fractions of palm, palm kernel and coconut oils having overall melting points from 21 to 30°C. Despite such relatively high melting points, loss of shape at ambient temperatures requires the chocolate to be held in a mould.

Thus, it is an object of a second aspect of the present invention to provide a fat-based heat-meltable confectionery product which, when consumed directly from a refrigerator or freezer, has superior eating characteristics to conventional chocolate consumed in the same way, but which retains its shape at eating temperatures above that of its storage, for example 8 to 50°C.

According to the second aspect of the present invention, there is provided a process for the manufacture of a fat-based heat-meltable confectionery product comprising the steps of:-

(i) mixing a fat-based heat-meltable confectionery mixture whose fat component remains substantially liquid from its melting temperature to a temperature not exceeding 30°C and water in a mixer to produce a fat-based heat-meltable confectionery composition, and

(ii) forming the fat-based heat-meltable confectionery composition into the fat-based heat-meltable confectionery product.

The confectionery mixture will normally contain, in addition to the fat component, at least one added sweetener (e.g. sugar) and may also contain one or more added flavouring ingredients.

The above process enables the product so produced to melt more rapidly when consumed directly from storage at sub-ambient temperature than a corresponding confectionery product formed from the fat-based heat-meltable confectionery mixture not having undergone the process consumed in the same way, and to retain its shape at ambient temperatures.

Preferably said fat component referred to in step (i) is liquid at less than 20°C.

Preferably step (i) is effected by a low-shear extruder mixer, and more preferably, a cavity transfer mixer, for example that disclosed in EP 0048590.

Preferably, said fat component comprises one or more vegetable oils which are more preferably selected from the group consisting of sunflower, maize, groundnut, palm, palm kernel and coconut oils.

Preferably, said fat component oil(s) account(s) for at least 5% by weight of the fat-based heat-meltable confectionery mixture, and more preferably account(s) for between 5% and 55% by weight, and most preferably 15 to 40% by weight.

Also according to the second aspect of the present invention, there is provided a fat-based heat-meltable confectionery product prepared in accordance with the process of said second aspect of the present invention.

Surprisingly, it has been found that such a fat-based heat-meltable confectionery product is capable of retaining its shape at ambient temperatures (e.g. 8 to 50°C) even when the entire fat component consists of a low temperature melting fat such as sunflower oil (melting point -16°C).

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawing which is a schematic representation of an apparatus for performing a process in accordance with the first aspect of the present invention.

Referring to the drawing, an apparatus for performing the process of the present invention comprises a Silverson high-shear mixer 2, first and

second thermostatically controlled holding tanks 4a,4b, a pair of flow-control pumps 6a,6b, a cavity transfer mixer 8 (sold under the tradename CTM under license from the Rubber and Plastics Research Association), a forming station 10 and a cooling tunnel 12. The cavity transfer mixer 8 has first and second inlets 8a,8b and a single outlet 8c.

A flow path exists between the Silverson high shear mixer 2, the first holding tank 4a and the first inlet 8a of the cavity transfer mixer 8. A flow path also exists between the second holding tank 4b and the second inlet 8b of the cavity transfer mixer 8. The outlet 8c of the cavity transfer mixer 8 is connected to a forming station 10 linked by conveyor to the cooling tunnel 12.

In use, an oil/water emulsion (either water-in-oil or oil-in water) is prepared in the Silverson high shear mixer 2 and passed into the first holding tank 4a. A pre-prepared fat-based heat-meltable confectionery mixture is transferred to the second holding tank 4b, with both holding tanks 4a,4b being maintained at the respective desired temperature. The pumps 6a,6b are activated, causing the oil/water emulsion and the fat-based heat-meltable confectionery mixture to be passed via the respective inlets 8a,8b into the cavity transfer mixer 8. The relative flow rates of the pumps 6a,6b are adjusted so that a fat-based heat-meltable confectionery composition having a desired water content will be formed. The oil/water emulsion is mixed into the fat-based heat-meltable confectionery mixture as it passes through the cavity transfer mixer 8 until a substantially homogeneous fat-based heat-meltable confectionery composition emerges from the outlet 8c of the cavity transfer mixer 8. The composition is formed into bars of a desired size and shape. The bars are passed by

conveyor to the cooling tunnel 12 where they are cooled. If the pre-prepared fat-based heat-meltable confectionery mixture is chocolate, it may be tempered before passing into the cavity transfer mixer 8. Alternatively, the chocolate composition formed in the cavity transfer mixer 8 may be tempered after having passed therethrough.

It will be understood that if water rather than an emulsion is to be supplied to the first inlet 8a of the cavity transfer mixer 8, then the Silverson high shear mixer 2 is not required.

In the following Examples, all percentages are weight percentages unless specified otherwise.

Example 1

Water (1%) was added at 40°C to the first inlet 8c of the cavity transfer mixer 8 and a tempered milk chocolate mixture (milk solids 24.1%, sugar (sucrose) 47.4%, cocoa mass 11.6%, cocoa butter 11.3%, vegetable fat 4.9%, emulsifier 0.6% and flavouring 0.1%, with moisture content 1.0%) at 28°C to the second inlet 8b. The chocolate composition which emerged from the outlet 8c of the cavity transfer mixer was slightly more viscous than the chocolate mixture, but was substantially homogeneous and not detempered (as determined by visual inspection).

Comparative Examples 1A and 1B

A tempered chocolate mixture of the same composition as used in Example 1 was stirred at 28°C in a Hobart planetary mixer (Example 1A) and a Winkworth Z-blade mixer (Example 1B). The direct addition of

water (1%) caused in each case the formation of a viscous, detempered, gritty mass, unsuitable for product formation.

The above Examples demonstrate the importance of the choice of mixer for the water to be successfully incorporated into the chocolate mixture, and the fact that, if the cavity transfer mixer is used, even the addition of water itself does not cause detempering of tempered chocolate.

Example 2

An oil-in-water emulsion (47.5% water; 47.5% cocoa butter; 5% soya lecithin) was prepared in the Silverson high-shear mixer 2 and added to the tempered milk chocolate mixture of Example 1 in the manner described in Example 1 to give a final added water content of 1.2%. The chocolate composition emerging from the cavity transfer mixer 8 was formed into bars and cooled.

Example 3

Example 2 was repeated using a water-in-oil emulsion (47.5% water; 47.5% cocoa butter; 5% PGPR) to give a chocolate product with a final added water content of 1.2%. The hardness of the bars, measured as the average force in grams required to compress the chocolate conditioned and held at 35°C by 4mm, is given in Table 1.

Comparative Examples 3A and 3B

Comparative examples 1A and 1B were repeated using the water-in-oil emulsion of Example 3 (a total water content of 2.2%) in place of the

water. The chocolate composition was formed into bars. The hardness values are given in Table 1.

Table 1: Effect of mixer on hardness of chocolate product at 35°C

	Example 3	Example 3A	Example 3B
Hardness (grams force)	1760	305	520

Example 4

Example 3 was repeated using untempered milk chocolate of the same composition as in Example 3 maintained at 40°C.

Thus, it will be clear that the process of the present invention offers distinct advantages in terms of the hardness of the chocolate product. The hardness values reflect the relative abilities of the products to retain their shape at a given temperature. By comparison, the same milk chocolate having no water or water emulsion added has a hardness of <60g. In addition, the texture and mouthfeel of the chocolate of Example 3 was superior to that of Comparative Examples 3A and 3B.

The following Examples are illustrative of the second aspect of the present invention:-

Example 5

Sugar (50 kg), skimmed milk powder (22.6 kg) and low fat cocoa powder (6.1 kg) were premixed and milled at ambient temperature using an

Alpine classifier (mill speed 7000 rpm, classifier speed 3000 rpm) such that 90% of the resultant particles were less than 30 microns in diameter. The above milled powder (4 kg) was conched with butterfat (460 g), sunflower oil (1 kg) and lecithin (54 g) for 4 hours at speed 1 in a Hobart mixer jacketed at 40°C. The resultant mixture was transferred to a Z-blade mixer and a water-in-oil emulsion at 3% of the mix was slowly added at 30°C. The emulsion contained water (47.5%), cocoa butter (47.5%) and PGPR (5.0%). Mixing was continued until the emulsion was dispersed. The chocolate mixture was put into moulds, stored in a refrigerator and demoulded after cooling. Demoulded product had structural integrity at ambient temperature. Chocolate from the refrigerator or the deep freeze melted readily in the mouth to deliver a typical chocolate flavour.

Example 6

2.5 kg milk chocolate crumb (16% fat) was blended with 0.236 kg butterfat and passed through a refiner. 2.68 kg of the refined material was blended in a Hobart mixer with 0.149 kg sunflower oil and 0.016 kg soya lecithin dispersed in cocoa butter for about 2 hours at 40°C until a smooth homogeneous mix was obtained. A water-in-oil emulsion as in Example 1 at 3% of the stirred mix was added and blended. The chocolate was put into moulds and stored in a refrigerator before demoulding. The product was similar in structural integrity at ambient temperature to the product of Example 5.

Example 7

Powder mix as in Example 5 (1.6 kg) was blended in a Hobart mixer at 40°C with butterfat (184 g) and soy lecithin (22 g) followed by blending with groundnut oil (400 g). This blend was fed to the cavity transfer mixer

8 at 40°C while water-in-oil emulsion was pumped to the inlet 8a of the mixer at a rate to give a final moisture content of 2.2% in the chocolate. The chocolate emerging from the mixer was formed into bars and cooled. The product had improved structural integrity at ambient temperature compared with chocolate of Examples 5 and 6, while being at least equal in sensory qualities.

Surprisingly, the chocolates of Examples 5 to 7 retained their structural integrity at ambient temperature, despite the fat component being substantially liquid.

CLAIMS

1. A continuous process for the manufacture of a fat-based heat-meltable confectionery product comprising the steps of:-

(i) introducing a fat-based heat-meltable confectionery mixture into a low-shear extruder mixer (8),

(ii) introducing water into the low-shear extruder mixer (8),

(iii) mixing the fat-based heat-meltable confectionery mixture and water as they pass through the mixer (8) to form a fat-based heat-meltable confectionery composition, and

(iv) forming the fat-based heat-meltable confectionery composition into the fat-based heat-meltable confectionery product.

2. A method as claimed in claim 1, wherein said low-shear extruder mixer (8) is a cavity-transfer type mixer.

3. A method as claimed in claim 1 or 2, wherein the water is introduced into the mixer (8) in the form of an emulsion with oil.

4. A method as claimed in claim 3, wherein the emulsion is a water-in-oil emulsion.

5. A method as claimed in claim 3 or 4, wherein an emulsifier is included.

6. A method as claimed in any preceding claim, wherein sufficient water is added such that the fat-based heat-meltable confectionery product formed in step (iv) has a water content in the range of 1.8 to 3.0% by

weight.

7. A method as claimed in claim 6, wherein the fat-based heat-meltable confectionery product formed in step (iv) has a water content in the range of 1.8 to 2.5% by weight.

8. A method as claimed in any preceding claim, wherein steps (i) and (ii) are effected simultaneously.

9. A method as claimed in any preceding claim, wherein the fat-based heat-meltable confectionery mixture is a chocolate mixture.

10. A method as claimed in claim 9, wherein the chocolate mixture is tempered.

11. A method as claimed in claim 9 or 10, wherein the fat-based heat-meltable confectionery mixture is added to the mixer (8) at 27 to 45°C.

12. A method as claimed in claim 11, wherein the mixer (8) is maintained at a temperature of 27 to 45°C.

13. A method as claimed in claim 10, wherein the tempered chocolate mixture is added to the mixer (8) at less than 30°C

14. A method as claimed in claim 13, wherein the mixer (8) is maintained at less than 30°C.

15. A method as claimed in any preceding claim, wherein in step (ii), the water is added to the mixer (8) at 30 to 45°C.

16. A method as claimed in claim 15, wherein in step (ii), the water is added to the mixer (8) at 40°C.

17. A fat-based heat-meltable confectionery product prepared in accordance with the method of any one of claims 1 to 16.

18. A process for the manufacture of a fat-based heat-meltable confectionery product comprising the steps of:-

(i) mixing a fat-based heat-meltable confectionery mixture whose fat component remains substantially liquid from its melting temperature to a temperature not exceeding 30°C and water in a mixer (8) to produce a fat-based heat-meltable confectionery composition, and

(ii) forming the fat-based heat-meltable confectionery composition into the fat-based heat-meltable confectionery product.

19. A method as claimed in claim 18, wherein said fat component referred to in step (i) is liquid at less than 20°C.

20. A method as claimed in claim 18 or 19, wherein the mixer (8) in step (i) is a low-shear extruder mixer.

21. A method as claimed in claim 20, wherein said mixer (8) is a cavity transfer mixer.

22. A method as claimed in any one of claims 18 to 21, wherein said fat component comprises one or more vegetable oils.

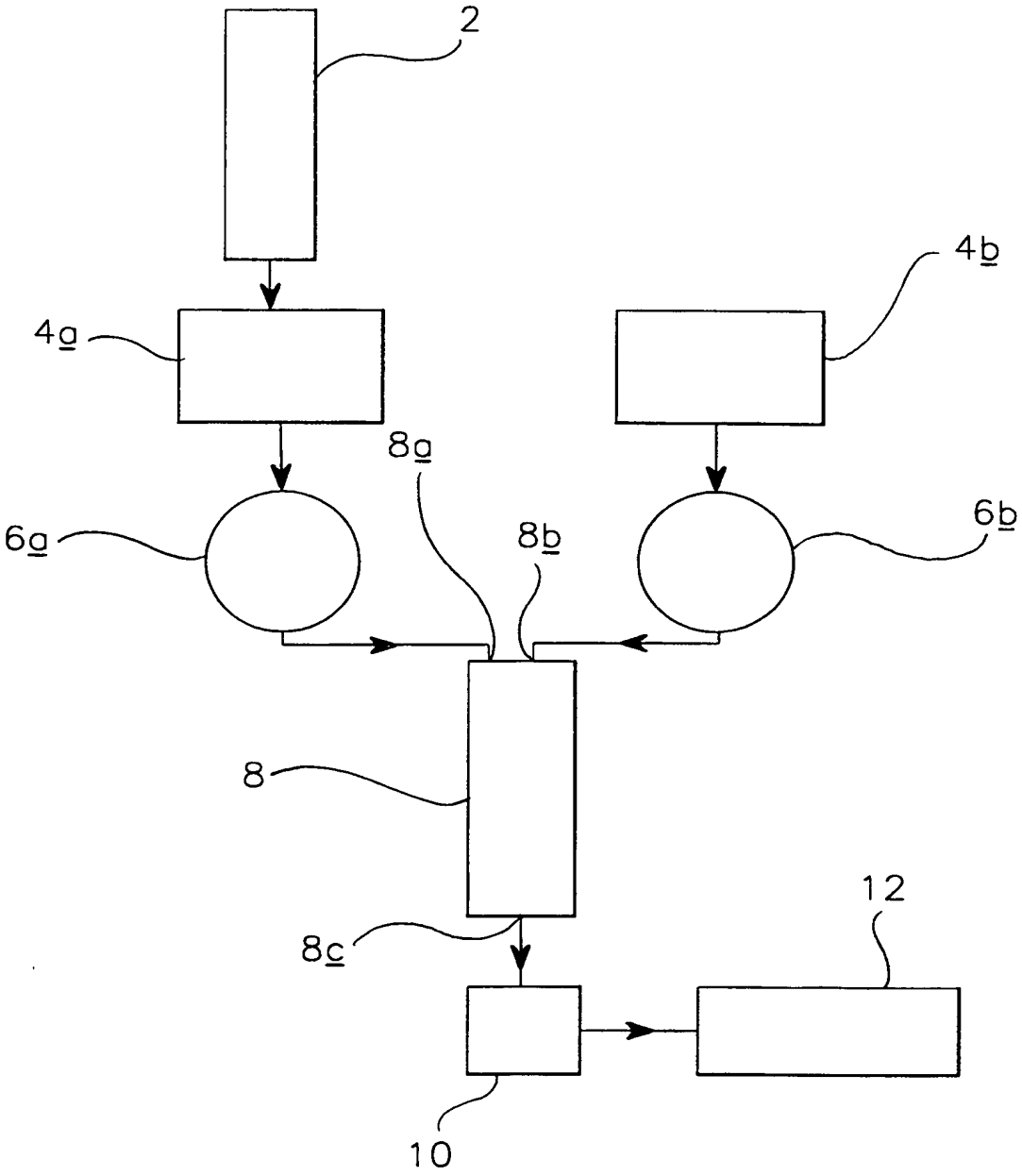
23. A method as claimed in claim 22, wherein said one or more vegetable oils are selected from the group consisting of sunflower, maize, groundnut, palm, palm kernel and coconut oils.

24. A method as claimed in claim 22 or 23, wherein said fat component oil(s) account(s) for at least 5% by weight of the fat-based heat-meltable confectionery mixture.

25. A method as claimed in claim 24, wherein said fat component oil(s) account(s) for between 5% and 55% by weight.

26. A method as claimed in claim 25, wherein said fat component oil(s) account(s) for between 15 to 40% by weight.

27. A fat-based heat-meltable confectionery product prepared in accordance with the method of any one of claims 18 to 26.


2
4a
4b
8a
6a
8b
6b
8
12
8c
10

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 99/03860

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23G1/00 A23G3/00 A23G1/04 A23G1/10 A23G1/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23G B01F B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	EP 0 958 747 A (DOVEUROPE) 24 November 1999 (1999-11-24) page 3, line 28 - line 30 page 3, line 40 - line 44 page 4, line 9 - line 12 claims 1,6-11	18,19, 22,24-27
X	EP 0 800 770 A (SOCIETE DES PRODUITS NESTLÉ) 15 October 1997 (1997-10-15) page 2, line 53 -page 3, line 2; claims 1-10; examples 1,5 page 2, line 19 - line 20	1,6, 8-10, 17-20, 22,27

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 February 2000	23/02/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Lepretre, F

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 311 481 A (SOCIETÉ DES PRODUITS NESTLÉ) 1 October 1997 (1997-10-01)	1,6-9, 17-20, 22,23,27
A	page 3, paragraph 2; claims 1,5,7,14,15,17-20	3-5
X	EP 0 393 327 A (LOTTE CO., LTD.) 24 October 1990 (1990-10-24)	18,19, 22,24-27
A	claims; examples	1-17,20, 23
X	EP 0 033 718 A (BATELLE MEMORIAL) 12 August 1981 (1981-08-12)	18,19, 22,24-27
A	claims 1-4,7,12,13; examples	1-17,20, 23
X	US 2 760 867 A (KEMPF ET AL.) 28 August 1956 (1956-08-28) column 5, line 15 -column 6, line 14	18,19, 22,27
A	claims 1-3,8,9	1-17,20
X	WO 93 12664 A (KARLSHAMNS OILS & FATS AB) 8 July 1993 (1993-07-08) cited in the application	18,19, 22,24-27
A	page 4, line 24 - line 28 page 5, line 4 - line 9 claims 1,3,5; examples 2,6	1-17,20
X	WO 91 19424 A (MARS G.B. LIMITED) 26 December 1991 (1991-12-26) page 8, line 24 -page 10, line 18; examples	18,19, 22-27
X	EP 0 354 600 A (UNILEVER N.V.) 14 February 1990 (1990-02-14)	18,19, 22-27
A	page 2, line 52 -page 3, line 4 page 3, line 17 - line 21 page 3, line 43 - line 47 page 4, line 57 -page 5, line 14 page 5, line 49 - line 54; claims 8,9; examples	1-17
X	FINCKE, H. ET AL.: "Handbuch der Kakaoerzeugnisse" 1965 , SPRINGER , BERLIN XP002129392 page 252 -page 254	18,19,27
A	GB 1 520 490 A (WACKER CHEMIE) 9 August 1978 (1978-08-09) page 3, line 99 - line 116; examples 5,6	1,2,9, 18,20,21

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 99/03860

Patent document cited in search report		Publication dat	Patent family member(s)		Publication dat
EP 958747	A	24-11-1999	NONE		
EP 800770	A	15-10-1997	AU	711208 B	07-10-1999
			AU	1783997 A	16-10-1997
			CA	2200887 A	12-10-1997
			JP	10028530 A	03-02-1998
			NZ	314553 A	29-04-1999
			US	5965179 A	12-10-1999
GB 2311481	A	01-10-1997	AU	1648997 A	02-10-1997
			BG	101281 A	30-01-1998
			BR	9701456 A	18-08-1998
			CA	2198759 A	27-09-1997
			CZ	9700912 A	15-10-1997
			EP	0797922 A	01-10-1997
			GB	2311483 A	01-10-1997
			HU	9700643 A	29-12-1997
			JP	10004884 A	13-01-1998
			NO	971193 A	29-09-1997
			NZ	314293 A	28-07-1998
			PL	319133 A	29-09-1997
			SK	37297 A	08-10-1997
			ZA	9702448 A	21-09-1998
EP 393327	A	24-10-1990	JP	2276537 A	13-11-1990
			JP	2514711 B	10-07-1996
			AU	626650 B	06-08-1992
			AU	5219690 A	18-10-1990
			DE	69008609 D	09-06-1994
			DE	69008609 T	01-09-1994
			KR	9705236 B	14-04-1997
			US	5160760 A	03-11-1992
EP 33718	A	12-08-1981	AR	222743 A	15-06-1981
			AT	5226 T	15-11-1983
			AU	542304 B	14-02-1985
			AU	6664581 A	06-08-1981
			CA	1162783 A	28-02-1984
			ES	498924 A	01-05-1982
			GR	73126 A	07-02-1984
			JP	57115140 A	17-07-1982
			KR	8600888 B	16-07-1986
			MX	6322 E	01-04-1985
			OA	6731 A	30-06-1982
			US	4446166 A	01-05-1984
			ZA	8100592 A	24-02-1982
US 2760867	A	28-08-1956	NONE		
WO 9312664	A	08-07-1993	SE	507450 C	08-06-1998
			AU	3270493 A	28-07-1993
			EP	0661925 A	12-07-1995
			SE	9103783 A	21-06-1993
			US	5486376 A	23-01-1996
WO 9119424	A	26-12-1991	AU	8001191 A	07-01-1992
			CA	2085613 A	20-12-1991
			DE	69117059 D	21-03-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 99/03860

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9119424 A		DE 69117059 T	27-06-1996
		EP 0533815 A	31-03-1993
		ES 2084171 T	01-05-1996
EP 354600 A	14-02-1990	AT 94025 T	15-09-1993
		AU 3007489 A	15-02-1990
		DE 68908984 D	14-10-1993
		DE 68908984 T	27-01-1994
		JP 2200145 A	08-08-1990
		US 5248509 A	28-09-1993
GB 1520490 A	09-08-1978	DE 2458862 A	16-06-1976
		BE 836479 A	10-06-1976
		CH 610218 A	12-04-1979
		FR 2293970 A	09-07-1976
		IT 1052784 B	20-07-1981
		JP 51085552 A	27-07-1976
		NL 7513473 A	15-06-1976